

# Herbalism in wound care: A case of garlic burn



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## INTRODUCTION

Wound care is an important aspect of patient counseling after skin biopsies. The methods commonly used promote maintenance of a clean, insulated, moist wound surface with application of plain petrolatum or topical antibiotic ointment under a bandage. Recently, investigators explored the scientific evidence for alternative, herbal-based topicals, such as a 30% garlic ointment.<sup>1</sup> When used in appropriate concentrations, such treatments can be medically efficacious. As some patients may prefer and attempt herbal wound care due to cultural background or beliefs, physicians should be aware of such practices and the associated benefits/risks. Here, we highlight a case of cultural influence on a patient's post-biopsy care causing localized garlic burn, and briefly discuss the scientific data pertaining to cutaneous application of garlic.

## CASE DESCRIPTION

A 20-year-old Latina patient initially presented with complaints of a diffuse rash. Two punch biopsies were performed, and the patient was counseled on appropriate wound care. She returned two weeks later for suture removal, but in the interim, she had developed dusky violaceous scaly geometric plaques confined to the biopsy sites (Fig 1). The clinical history revealed that the patient's mother, a native of Honduras, had applied raw, ground garlic to the areas, believing it would provide analgesia and promote healing. She applied the poultice directly to the skin under occlusion with a band-aid for a single night. The patient woke up to pain and vesiculation in the areas with subsequent desquamation and post-inflammatory hyperpigmentation. She was diagnosed with irritant contact dermatitis, colloquially known as "garlic burn."



**Fig 1.** Garlic-induced irritant contact dermatitis: violaceous geometric plaques isolated to the sites of punch biopsies.

## DISCUSSION

Despite its widespread and multicultural use as a natural remedy, garlic (*Allium sativum*) is known to cause a multitude of dermatoses, including but not limited to irritant contact dermatitis, allergic contact dermatitis, contact urticaria, pemphigus, and systemic allergic contact dermatitis.<sup>2</sup> The severity and type of cutaneous reaction elicited by garlic is largely based on method of use. For our purposes, we will concentrate on pathology resulting from topical garlic use rather than ingestion. True contact allergy to garlic is uncommon and mostly manifests as occupational hand dermatitis in cooks.<sup>2</sup> The antigenic response is primarily induced by two protein sensitizers; allicin and diallyl disulfide, which elicit types I and IV hypersensitivity reactions, respectively, or a hybrid of the two. Diagnosis is made via a thorough clinical history inclusive of hobbies and occupation, as adjunct to patch testing with diallyl sulfide. Grinding, slicing, or emulsifying garlic releases the aforementioned sensitizers. If applied directly to skin in this form, irritant contact dermatitis

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can occur and manifest as superficial skin necrosis, acantholysis, and vesiculation.<sup>3</sup>

The vegetable's potential benefits remain a topic of active scientific investigation, as studies have alluded to its potential in wound antiseptics and augmentation of healing.<sup>1,4</sup> In 10% solution with water, garlic retains its irritant capacity, but when applied in a cream or ointment vehicle, it exhibits fewer side effects.<sup>1,3</sup> Its antibacterial and antifungal properties, attributed to allicin, have been demonstrated both by *in-vitro* and animal models.<sup>1,4</sup> Allicin, the molecule that gives garlic its characteristic odor, is also thought to activate fibroblasts, potentially yielding an accelerant effect on wound healing.<sup>1</sup> In a recent study, 30% crushed garlic in petrolatum was applied to murine biopsy sites, and faster healing time was observed compared with controls.<sup>1</sup>

As evidenced by the current literature, garlic has both beneficial and pathogenic potential when used topically. In the United States, garlic is frequently used as a topical remedy for rashes and burns among those who favor naturopathic therapies. In case of our patient, garlic use had been passed down through generations. Culturally, it remains a

common medicinal tool in many Spanish-speaking countries.<sup>5</sup> Clinician familiarity with evidence-based phytomedicinal and naturopathic wound care regimens can help prevent adverse cutaneous events in patients who prefer these methods. If patients prefer alternative herbal-based treatments, a discussion of the associated risks and benefits is pertinent.

#### Conflicts of interest

None disclosed.

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